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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/929,961   | 08/15/2001  | Frank Duvinage       | MB 406              | 2156             |
| 27956  | 7590        | 05/13/2005           | EXAMINER            |                  |
| KLAUS J. BACH<br>4407 TWIN OAKS DRIVE<br>MURRYSVILLE, PA 15668 |             |                      | TRAN, HIEN THI      |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 1764                |                  |
| DATE MAILED: 05/13/2005  |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

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|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/929,961 | <b>Applicant(s)</b><br>DUVINAGE ET AL. |  |
|                              | <b>Examiner</b><br>Hien Tran         | <b>Art Unit</b><br>1764                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.  
2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.  
4a) Of the above claim(s) 6 and 7 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1, 3-5, 8 and 9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☒ Claim(s) 1 and 3-9 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 8/15/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

*Handwritten signature*

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 8-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, in claim 8, lines 3-8 the recited language is nowhere disclosed in the instant specification.

In claim 9, the recitation that the means for injecting additional fuel into the air is nowhere disclosed in the instant specification.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5, 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, line 4-5 “the nitrogen oxide store regeneration” and “the particle filter regeneration” have no clear antecedent basis.

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In claim 8, the language of the claim is directed to method limitation which renders the claim vague and indefinite as it is unclear as to what structural limitation applicants are attempting to recite.

In claim 9, since the elements in the claim, e.g. “means for injecting ...” is written in a “means-plus-function” format, it must be interpreted as corresponding structure described in the specification or the equivalents thereof consistent with 35 U.S.C. 112, sixth paragraph. *In re Donaldson*, 16 F.3d 1189, 1193, 29 USPQ 1845, 1848 (Fed. Cir. 1994) (en banc). However, since the instant specification does not disclose adequate structures corresponding to each of the claimed elements and the equivalents for performing the recited functions, it is impossible to determine the structure of the claimed elements and the equivalents thereof, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967). See claim 6 likewise.

### ***Claim Objections***

5. Claims 1, 8-9 are objected to because of the following informalities:

In claim 1, line 2 “Diesel” should be changed to --diesel--; in line 4 --(NO<sub>x</sub>)-- should be inserted before “store”; in line 6 “(2)” should be deleted.

In claim 8, line 5 “oxidizing” should be changed to --oxidation-- (note claim 1, line 7). See claim 9 likewise.

Appropriate correction is required.

### ***Drawings***

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “means for injecting addition

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fuel” (claim 9) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings to comply with CFR 1.84(p)(5), e.g. they should include the reference sign(s) mentioned in the specification and vice versa.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 4, 8 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 835,684.

EP 835,684 discloses an exhaust gas cleaning unit for diesel engine of a motor vehicle comprising: an oxidation catalyst, e.g. a first catalyst (col. 1, lines 55-58; col. 2, lines 9-11); a particle filter, e.g. a second catalyst (col. 2, lines 3-4); and a nitrogen oxide store being disposed upstream of the particle filter, e.g. the second catalyst (col. 2, lines 44-49); the filter including a coating of noble metal or three-way catalyst, such as platinum (col. 1, lines 3-7; col. 2, lines 3-12, 32-40, 44-49, etc.).

With respect to claim 8, since the claim is not structurally further limiting, the apparatus of EP 835,684 meets the instant claim.

Instant claims 1, 4, 8 structurally read on the apparatus of EP 835,684.

10. Claims 1, 8-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Khair et al (6,293,096).

With respect to claim 1, Khair et al discloses an exhaust gas cleaning unit for diesel engine of a motor vehicle comprising: a particle filter 32; and a nitrogen oxide store 22 being disposed upstream of the particle filter 32 for removing nitrogen oxides from the exhaust gas before the exhaust gas reaches the particle filter 32; and an oxidation catalytic converter arranged upstream of the nitrogen oxide store.

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With respect to claim 8, since the claim is not structurally further limiting, the apparatus of Khair et al meets the instant claim.

With respect to claim 9, Khair et al discloses means 40 for injecting additional fuel into the exhaust gas.

Instant claims 1, 8-9 structurally read on the apparatus of Khair et al.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khair et al (6,293,096) in view of WO 00/21647.

With respect to claim 3, the apparatus of Khair et al is substantially the same as that of the instant claim, but fails to disclose whether an oxidation catalytic converter may be provided downstream of the nitrogen oxide store.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide more than one oxidation catalytic converter in the apparatus of Khair et al so as to further purify the exhaust gas thereof, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Also note that it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

In any event, WO 00/21647 discloses the conventionality of providing more than one catalytic converter 14, 30.

It would have been obvious to one having ordinary skill in the art to provide another catalytic converter downstream of the filter as taught by WO 00/21647 in the apparatus of Khair et al so as to further convert the pollutants which still remained in the exhaust gas thereof .

With respect to claim 4, Khair et al discloses that the filter has a soot oxidation function, but is silent as to whether a coating may be provided to perform said soot oxidation function.

However, WO 00/21647 discloses the conventionality of providing a filter having a coating of alumina and catalyst.

It would have been obvious to one having ordinary skill in the art to provide a coating as taught by WO 00/21647 in the apparatus of Khair et al so as to assist the converting of soot particles.

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khair et al (6,293,096) in view of Strehlau et al (6,089,015) or Held (6,531,099).

With respect to claim 5, Khair et al discloses provision of using a sensor downstream of the filter, but is silent as to the specific type of the sensor, e.g. a lambda probe.



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However, Strehlau et al and Held disclose the conventionality of providing lambda probes in controlling the purification system.

It would have been obvious to one having ordinary skill in the art to select an appropriate sensor, such as lambda probe, in controlling the purification system of Khair et al as taught by Strehlau et al or Held, as use of such is conventional in the art and no cause for patentability here.

15. Claims 3, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 835,684 in view of WO 00/21647.

With respect to claim 3, the same comments with respect to WO 00/21647 apply.

With respect to claim 9, WO 00/21647 discloses provision of means for injecting additional fuel into the exhaust gas.

It would have been obvious to one having ordinary skill in the art to provide the means for injecting additional fuel into the exhaust gas as taught by WO 00/21647 in the apparatus of EP 835,684 so as to assist the regeneration of the NOx trap.

16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over by EP 835,684 in view of Strehlau et al (6,089,015) or Held (6,531,099).

The same comments with respect to Strehlau et al and Held apply.

### ***Response to Arguments***

17. Applicant's arguments filed 3/3/05 have been fully considered but they are not persuasive.

Applicants argue that EP 835,684 discloses a series arrangement of an oxidation catalytic converter and nitrogen oxide storage device which have nothing to do with a particle filter. Such

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contention is not persuasive as EP 835,684 discloses a series arrangement of an oxidation catalyst, e.g. a first catalyst (col. 1, lines 55-58; col. 2, lines 9-11); a particle filter, e.g. a second catalyst (col. 2, lines 3-4); and a nitrogen oxide store being disposed upstream of the particle filter, e.g. the second catalyst (col. 2, lines 44-49). EP 835,684 does disclose that the soot particles were captured within the monolith (col. 2, lines 17-18).

***Conclusion***

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HT  
May 11, 2005

*Hien Tran*  
**Hien Tran**  
**Primary Examiner**  
**Art Unit 1764**